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Tricyrtis pseudolatifolia Hir. Takah. et H. Koyama (Liliaceae), A New Species from Central China

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Plants in central China often identified as *Tricyrtis latifolia* are distinct from that species in many characteristics: the perianth is nearly horizontally patent at the level of 1/3 from the base (obliquely ascending in *T. latifolia*); the anthers are much longer than those of *T. latifolia*; the inner tepals are narrowly trullate at the base (auriculate in *T. latifolia*); the roots contain orange anthraquinoid pigments; the leaves are pubescent on both surfaces (glabrous on both surfaces or somewhat pubescent only in the undersurface in *T. latifolia*). We therefore describe the central Chinese plants as a new species, *T. pseudolatifolia*, which we assigned to section *Tricyrtis*, to which *T. latifolia* belongs.

Key words: China, Liliaceae, new species, *Tricyrtis latifolia*, *Tricyrtis pseudolatifolia*

Until several years ago, most botanists believed that no or few endemic species of *Tricyrtis* occurred in continental China. Tsi (1980) recognized only two species, *T. maculata* and *T. macropoda* for China and Takahashi (1980, 1987) and Chen & Takahashi (2000) reported a third species, *T. latifolia*.

In the genus *Tricyrtis*, underground parts (rhizome morphology, pigments of roots) and flowers (floral size, floral color, perianth shape, basal morphology of tepals etc.) are quite important to identify the species, since those characters are usually stable, although floral colors sometimes vary, as in *T. chinensis* (Takahashi *et al.* 2001). Vegetative above ground parts often show large variation. Specimens of *Tricyrtis* without flowers and / or underground parts are apt to be misidentified. Detailed examination of the diagnostic characters is advisable for correct identification and classification.

The number of species attributed to China increased when Takahashi (1997) and Takahashi *et al.* (2001) described *Tricyrtis viridula* and *T. chinensis* from east and southeast China. Specimens of *T. viridula* had often been misidentified as *T. macropoda* or *T. maculata*. The new species with patent perianth and annual rhizome reported here, however, is distinct from *T. macropoda*, which has a recurved perianth and perennial rhizome. The thin orange nectar guide in the flowers and nearly glabrous stems of *T. viridula* are important characteristic for distinguishing it from *T. maculata*, which lacks nectar guides and has densely pubescent stems (Takahashi 1997). Although *T. chinensis* is similar to *T. macropoda* in the above ground parts, including flowers, the annual rhizome is distinctly different from the perennial rhizome of the *T. macropoda*, and the anthraquinoid pigments in the roots are less conspicuous than in the latter (Takahashi *et al.* 2001).

Here we describe another new species of *Tricyrtis* from Central China. Although these plants have often been identified as *T. latifolia* (*e.g.*, Takahashi 1980) and sometimes as *T. macropoda* or

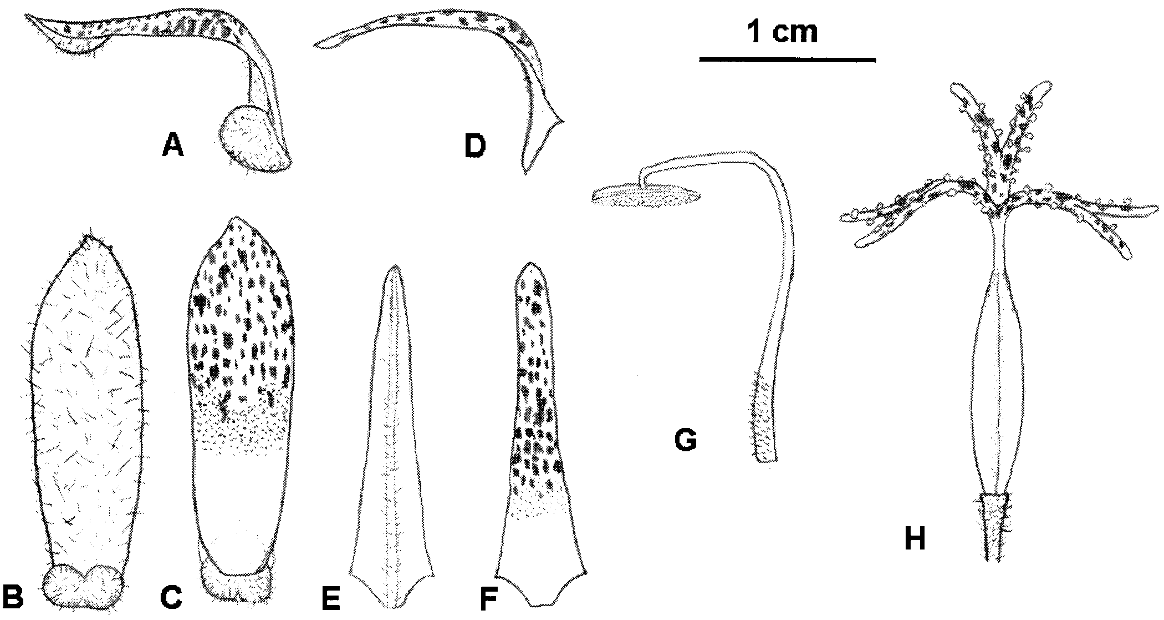

FIG. 1. Floral parts of *Tricyrtis pseudolatifolia.* A, side view of outer tepal. B, outside of outer tepal. C, inside of outer tepal. D, side view of inner tepal. E, outside of inner tepal. F. inside of inner tepal. G, stamen. H, pistil. The flowers are from plants cultivated at Gifu Univ. from seeds of specimens collected in Muzhuo, Pingwu County, Sichuan Province (*H. Takahashi 20018* in KUN and TNS).

T. maculata, they are distinct.

Tricyrtis pseudolatifolia Hir. Takah. et H. Koyama, **sp. nov.**

Affinis *Tricyrti latifoliae*, sed tepalo patenti 1/3 e basi et radicibus aurantiacis diversa.

Typus. CHINA, Sichuan Province, Pingwu County, Muzhuo, 1750m alt. (*H. Takahashi 20018*, holotypus in KUN, isotypus in TNS)

Herbs. Underground stolons 1-3(-4), 1-5 cm long. **Roots** thin, with orange anthraquinoid pigments. **Stem** erect, simple, solitary, scarcely flexuous, 50-100 cm tall, nearly glabrous. **Leaves** elliptic or obovate, base amplexicaul or cordate, apex acuminate or cuspidate, entire, ciliate, both surfaces pubescent, 10-18 cm long, 5-7 cm wide; main veins 7-9, clearly marked. Peduncle 3-10 cm long. **Inflorescence** terminal and sometimes also axillary in upper leaves, branches 1 or 2, cymose; pedicels 10-25 mm long; peduncle and pedicel with short conical and long glandular hairs. **Flowers** 3-5 per cyme. Perianth horizontally or somewhat recurved patent 1/3 from base; tepals 6, yellow or yellowish, distally greenish, with many small reddish purple spots and with a yellow spot on inner surface just below bend of tepal; outer tepals 3, narrowly elliptic, base saccate and conspicuously foveolate, apex acuminate, abaxial surface with short conical and long glandular hairs, 16-17 mm long, 5-6 mm wide; inner tepals 3, narrowly trullate, apex acute or somewhat rounded, midrib of abaxial surface with short conical and long glandular hairs, 15-16 mm long, 2-3 mm wide at middle, 4-5 mm wide basally. Stamens 6; filaments yellowish, distally patent, basally papillose, 17-19 mm long; anthers yellowish, 4-5 mm long. Ovary trigonal-fusiform, glabrous, 9-11 m long, 2 mm wide; style trifid, branches recurved-patent, deeply cut at middle, with small reddish purple spots and glandular protuberances on branches. **Capsule** trigonous, base cuneate, apex acuminate-attenuate, glabrous, septicidally dehis-

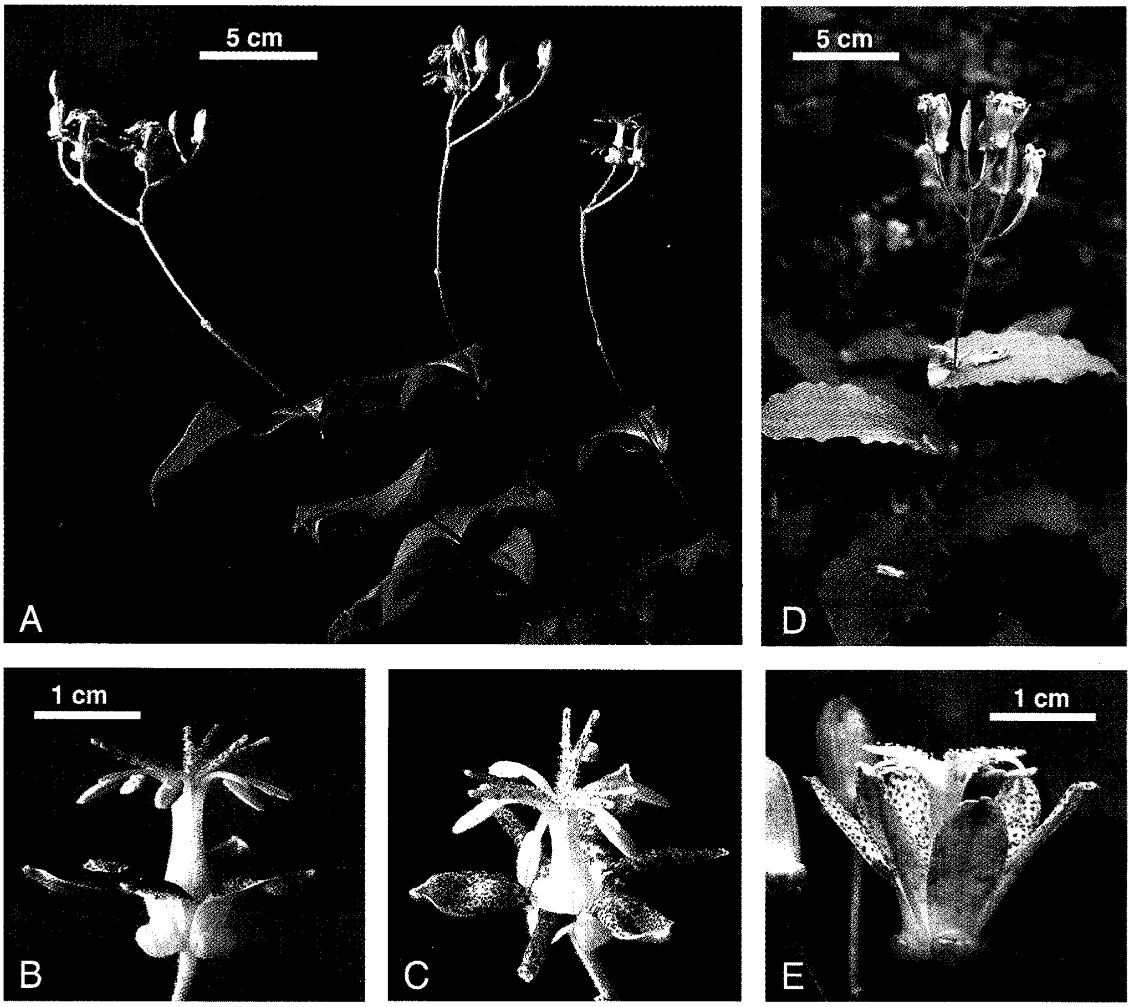

FIG. 2. Habit and flowers of *Tricyrtis pseudolatifolia* and *T. latifolia*. A, habit of *T. pseudolatifolia*. B and C, flowers of *T. pseudolatifolia*. D, habit of T. *latifolia*. E, flower of *T. latifolia*. The plants of *T. pseudolatifolia* were cultivated at Gifu Univ. from seeds of specimens collected in Muzhuo, Pingwu County, Sichuan Province (*H. Takahashi 20018* in KUN and TNS). The plant and flower of *T. latifolia* were photographed at Hikadedaira and Wasabidaira, respectively, in Takayama City, Japan.

cent. **Seeds** 2-3 mm long, 1.5-2 mm wide, blackish purple.

Japanese name: Kiza-hototogisu

Specimens examined: **Sichuan Province**: Jinfo-shan, Nanchuan, 1700 m, *G. Li 62676, 63333* (KUN); Jinfo-shan, Nanchuan, *G. Li 62741, 63149, 63425* (KUN); Shuangpin, Chenkou-xian, 1400 m, *T. Dai 107110* (KUN); Beiping, Chenkou, 1900 m, *P. Li 8002* (KUN); Guojiaba, Chenkou, 960 m, *Y. Qiao 1336* (KUN); Chenkou, 1450 m, *T. Dai 105646, 105947* (KUN); Renchiba, Wuxi-xian, 2200 m, *G. Yang 59257* (KUN, SHM); Shuang He Xiang, Wuxi-xian, 1900 m, *G. Yang 58703* (SHM); Sandengzi, Wushan-xian, 1900 m, *G. Yang 58954* (KUN, SHM), *58967* (SHM); Xianfengxiang, Xingwen, 1260 m, *anon. 466* (KUN); near Jiulaodong, Emei-shan, 1800 m, *G. Yang 56717* (KUN); Mt. Omei, 1950 m, *S. L. Sun 2555* (KUN); Emei-shan, *L. Zhao 1270* (SHM); Mt. Omei, 2150 m, *C. J. Luh 107* (A); Mt. Omei, Ching-las-tung, 1800 m, *L. Y. Tai 225* (A); Ascending to Tsing-chuan-fin. Hsien, 2000 m, *F. Wang 22334* (KUN, A). **Shanxi Province**: Langao, 1800 m, *P. Li 8227* (KUN); Langao, Muzhupo, 1400 m, *P. Li 8097* (KUN); Langao, Taohe, 1800 m, *P. Li 7686* (KUN); 1920 m, *P. Li 7873*; Ankang, Bijia-shan, *P. Li 8588* (KUN); Feng-xian, Xinquan-shan, 1600 m, *K. Fu 13004* (KUN); Foping, 1150 m, *X. Zhang 484* (KUN); Huangpaiyuan, Foping-xian, 1450 m, *K. Fu 4919* (KUN); Pingli-xian, Shizhai, 1210 m, *Maosandui 131* (KUN); Taibai-shan, 1450 m, *Qin Ling Research Team 227* (KUN); Weinan, Qingpangping, 1700 m, *Z. Wang 15753* (KUN);

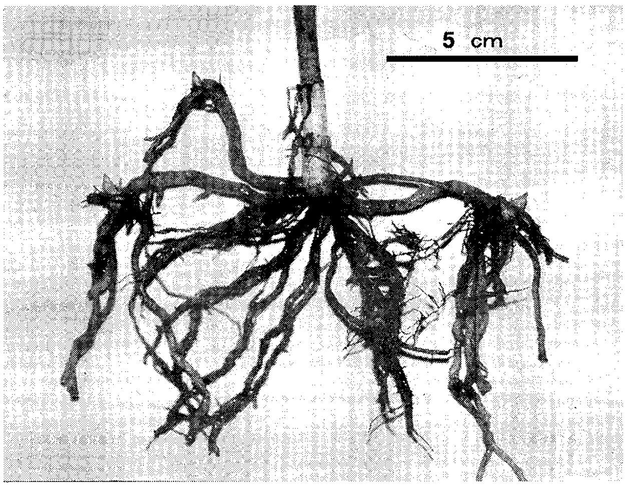

FIG. 3. Underground stolons of *Tricyrtis pseudolatifolia* (*H. Takahashi 20018* in KUN).

Zhenping-xian, Dongfeng Gongshe, 1600 m, *Shaanxi Province Zhongcayao Research Team 1725* (SHM). **Hubei Province**: *A. Henry 4619A p.p.* (A); *A. Henry 5871* (A); Bandong, 2260 m, *K. Fu et al. 925* (KUN); Xuanen, *H. Li 5208* (KUN); Enshi, Tai-shan, 1550 m, *K. Fu et al. 1507* (KUN); Shennongjia Forest District, along Yuergou canyon, 2200 m, *1980 Sino-Amer. Exped. 312* (A, KUN, KYO); Shennongjia Forest District, E side of the Mengjia River, 1300 m, *1980 Sino-Amer. Exped. 505* (A); Shennongjia Forest District, along lumber trail in a west-facing canyon directly across the river from Jiuhuping Forest Farm 1700 m, *1980 Sino-Amer. Exped. 151*; Shennongjia Forest District, in a ravine on the E side of Jizigou Canyon ca. 0.5 km S of Jiuhuping Forest Farm, 1700 m, *1980 Sino-Amer. Exped. 80* (A); Shenlungkai, *K. S. Chow 76075* (A, KYO); Western Hupeh, *E. H. Wilson 369* (A). **Henan Province**: Funiushan, 1370 m, *Fu 201* (KUN).

Tricyrtis pseudolatifolia is similar to *T. latifolia* Maxim., particularly in vegetative habit; the leaves are broad and rounded at the base, the stems are nearly glabrous and glossy. The flowers, however, are distinctly different from those of *T. latifolia*. The perianth is nearly horizontally patent at 1/3 from the base in *T. pseudolatifolia*, whereas in *T. latifolia* it extends obliquely upward. The anthers in *T. pseudolatifolia* (4-5 mm) are much longer than those of *T. latifolia* (3.5 mm). The characteristic narrowly trullate inner tepals of *T. pseudolatifolia* are of a shape that is rare in *Tricyrtis*; the inner tepals of *T. latifolia* are clearly auriculate at the base, as in most species of section *Tricyrtis*. The roots of *T. pseudolatifolia* contain light orange anthraquinoid pigments, but *T. latifolia* lacks pigmentation. The leaves are pubescent on both the surfaces in *T. pseudolatifolia*, but glabrous on both surfaces, or rarely somewhat pubescent only on the undersurface, in *T. latifolia*. *Tricyrtis pseudolatifolia* has characteristics basically consistent with those of section *Tricyrtis*; the flowers are erect, the perianth is patent, the roots contain anthraquinoid pigments, the few hairs on the stem are oriented downward (see Takahashi 1980).

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Key to Continental Chinese species of *Tricyrtis* section *Tricyrtis*

1. Roots with orange anthraquinoid pigments; perianth patent of recurved, ground color yellow, yellowish or white
   2. Stem nearly glabrous; perianth patent, ground color yellow or yellowish ········ *T. pseudolatifolia*
   2. Stem setose; perianth recurved, ground color yellow or white ······························*T. chinensis*
1. Roots without orange anthraquinoid pigments; perianth patent, white or greenish white
   2. Stem glabrous; leaves nearly glabrous··· *T. viridula*
   2. Stem and leaves pubescent··· *T. maculata*

SHM for permission to examine specimens in their herbaria.

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